

**METHOD AND APPARATUS FOR NEUTRON MICROSCOPY WITH  
STOICHIOMETRIC IMAGING**

Abstract of the Disclosure

A system provides non-invasive stoichiometric detection and imaging of chemical elements and compounds in a material to be analyzed. The system includes a particle generator which generates first and second particles at a target position a first distance from the material. The system further comprises a photon detector capable of detecting photons resulting from irradiation of the material by the first particles and generating a plurality of first electrical signals. The system further comprises a particle detector array for detecting the second particles at a second distance, larger than the first distance, from the target position and generating a plurality of second electrical signals. The system further comprises an analyzer comprising a processor that produces a plurality of filtered electrical signals. The analyzer further comprises a plurality of electronic coincidence circuits which detect coincidences occurring between the plurality of filtered electrical signals and the plurality of second electrical signals.

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